

NONPROVISIONAL APPLICATION FOR LETTERS PATENT  
UNITED STATES OF AMERICA

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10 SHIN, residing at 5651 Williams Road, Locust, Georgia  
30093, citizens of Korea and I, Young Kyo Shinn, residing  
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United States, have invented certain new and useful  
improvements in a

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VACUUM CLEANER ATTACHMENT AND METHOD OF USE THEREOF

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of which the following is a specification.

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## VACUUM CLEANER ATTACHMENT AND METHOD OF USE THEREOF

### TECHNICAL FIELD

5       The present invention relates generally to vacuum cleaner attachments, and more specifically to a cleaning attachment especially suited for a wet/dry vacuum cleaner, having a squeegee, a semi-absorbent pad and sidewalls, wherein the unique combination and orientation of cleaning  
10 elements permit maximum air flow into the cleaning attachment, thereby improving cleaning performance.

### BACKGROUND OF THE INVENTION

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Various methods are known for cleaning surfaces. The method selected depends on whether it is desired to remove loose debris lying on a surface to be cleaned, in which a vacuum device or a brush and pan are utilized, or whether  
20 it is desired to remove water soluble material and/or very fine loose material from the surface. In the latter case, a sponge and/or mop, accompanied by water, is typically utilized. In a typical manual method for removing water

soluble material and fine dust, a cleaning head is attached to a handle, which is dipped into a bucket of cleaning solution and applied to a surface to be cleaned by an operator. The operator then manually scrubs the surface,  
5 and the cleaning head is again dipped back into the bucket and wrung out to remove the dirty cleaning solution. This conventional method requires substantial physical exertion by the operator to scrub and wring out the cleaning head. Moreover, dirty solution is repeatedly placed back onto the  
10 cleaning surface, resulting in an ineffective cleaning method.

Many of the above disadvantages are resolved by the utilization of a wet/dry vacuum cleaner. Wet/dry vacuum  
15 cleaners allow users to clean various types of debris off of a variety of different surfaces. The requirements for cleaning hard surfaces, such as hardwood floors or aluminum paneling, differ significantly from the requirements for cleaning soft surfaces, such as carpet or upholstery.  
20 Similarly, different cleaning elements are needed for dry suction operations than for wet cleaning operations. Thus, wet/dry vacuum cleaners typically employ various types of

cleaning attachments for various types of cleaning operations.

Numerous cleaning attachments have been developed for  
5 wet/dry vacuum cleaners. Nevertheless, many of these  
cleaning attachments are inefficient, messy, and still  
require a significant amount of operator effort. Some of  
these cleaning attachments are relatively efficient when  
utilized on flat and uniform surfaces that are readily  
10 accessible; however, they are relatively ineffective and  
provide unsatisfactory results when the surface to be  
cleaned is curved, uneven or is located in a relatively  
restricted area. In the car detailing industry, for  
example, unsightly streaks, runs and/or spots are often the  
15 result of incomplete wiping due to uneven and varying  
surfaces. Further, incompletely wiped cleaning solution  
often drips onto adjacent surfaces during the cleaning  
process.

20 Various cleaning elements have been added to vacuum  
attachments in attempting to solve these problems, yet they  
fall short of their intended purpose. For example,  
squeegee blades have been used to remove excess liquid from

cleaning surfaces. However, liquid retained on the squeegee blades often drips back onto the cleaned areas or adjacent surfaces when the squeegee blades are lifted from the cleaning surface. Furthermore, the addition of  
5 numerous cleaning elements often inhibits airflow into the vacuum apparatus, thereby decreasing cleaning performance.

Therefore, it is readily apparent that there is a need for a vacuum cleaner attachment that efficiently and  
10 effectively removes excess water and cleaning solution from a cleaning surface, thereby maximizing operator productivity and minimizing operation time. Additionally, there is a need for a vacuum cleaner attachment that permits maximum airflow into the attachment, thereby  
15 improving cleaning performance.

#### **BRIEF SUMMARY OF THE INVENTION**

20 Briefly described, in a preferred embodiment, the present invention overcomes the above-mentioned disadvantages and meets the recognized need for such a device by providing a vacuum cleaner attachment, especially

suited for a wet/dry vacuum cleaner, wherein the vacuum cleaner attachment has cleaning elements for efficiently and effectively removing excess water and cleaning solution from a surface to be cleaned, and wherein the unique  
5 combination and orientation of cleaning elements permit maximum air flow into the cleaning attachment.

According to its major aspects and broadly stated, the present invention in its preferred form is a vacuum cleaner  
10 attachment generally comprising a handle, an intake head, a semi-absorbent pad, a squeegee and sidewalls. More specifically, the present invention comprises an intake head that is integrally formed to a handle, thereby forming a continuous suction passageway to be connected to the  
15 vacuum source. In addition, a semi-absorbent pad and a squeegee are disposed on the intake head for effectively and efficiently removing liquid and debris from a cleaning surface, wherein the squeegee comprises ridges to permit maximum airflow into the vacuum cleaner attachment, thereby  
20 maximizing cleaning performance. The vacuum cleaner attachment also possesses sidewalls for providing structural support and maintaining the vacuum force.

While not limiting, the present invention has particular relevance in the car detailing industry. In its preferred method of use, after a cleaning solution has been applied to the exterior of a car, the vacuum cleaner attachment is moved over the surface to be cleaned, wherein dirt, dust, debris and the like, along with any residual cleaning solution, is removed by the squeegee. Any liquid or debris not cleared away by the squeegee is subsequently drawn into the intake head by the vacuum source. Further, any remaining liquid or debris is removed by the semi-absorbent pad.

Accordingly, a feature and advantage of the present invention is its unique combination and configuration of flexible cleaning elements that allow the vacuum cleaner attachment to conform to varying surfaces.

Another feature and advantage of the present invention is its unique combination and configuration of flexible cleaning elements that permit maximum airflow into the vacuum cleaner attachment, thereby enhancing cleaning performance.

Another feature and advantage of the present invention is its ability to prevent the occurrence of unsightly streaks, runs and/or spots.

5        Another feature and advantage of the present invention is its ability to effectively and efficiently remove liquid and debris from a cleaning surface, thereby minimizing operator effort and operation time.

10       Another feature and advantage of the present invention is its compact size and light weight, wherein the vacuum cleaner attachment is easy to operate.

15       These and other features and advantages of the present invention will become more apparent to one skilled in the art from the following description and claims when read in light of the accompanying drawings.

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## BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be better understood by reading the Detailed Description of the Preferred and  
5 Selected Alternate Embodiments with reference to the accompanying drawing figures, in which like reference numerals denote similar structure and refer to like elements throughout, and in which:

10       **FIG. 1** is a front perspective view of a preferred embodiment of the present invention;

**FIG. 2** is a rear perspective view of a preferred embodiment of the present invention;

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**FIG. 3** is a front perspective view of an alternate embodiment of the present invention;

**FIG. 4** is a front perspective view of an alternate  
20 embodiment of the present invention;

**FIG. 5** is a front perspective view of an alternate embodiment of the present invention; and

**FIG. 6** is a rear perspective view of an alternate embodiment of the present invention.

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**DETAILED DESCRIPTION OF THE PREFERRED**  
**AND SELECTED ALTERNATIVE EMBODIMENTS**

In describing the preferred and selected alternate  
10 embodiments of the present invention, as illustrated in  
**FIGS. 1-6**, specific terminology is employed for the sake of  
clarity. The invention, however, is not intended to be  
limited to the specific terminology so selected, and it is  
to be understood that each specific element includes all  
15 technical equivalents that operate in a similar manner to  
accomplish similar functions.

Referring now to **FIGS. 1-2**, the present invention in a  
preferred embodiment is a vacuum cleaner attachment 10  
20 generally preferably possessing handle 20, head 30, semi-  
absorbent pad 60, squeegee 70, and sidewalls 80.  
Preferably, handle 20 is a cylindrical tube having first  
end 22 and second end 24, wherein first end 22 is

dimensioned to receive a vacuum hose, thereby removably attaching vacuum cleaner attachment 10 to a vacuum cleaner. Although it is preferred that vacuum cleaner attachment 10 be attached to the vacuum cleaner by frictional fit, it is contemplated in an alternate embodiment that vacuum cleaner attachment 10 could be attached by other suitable means, such as, for exemplary purposes only, a tab and slot system, a threaded engagement, or vacuum cleaner attachment 10 could be permanently fixed to the vacuum cleaner or formed as a part thereof.

Preferably, second end 24 is integrally formed to head 30, wherein handle 20 and head 30 form a continuous passageway to be connected to the vacuum source. Preferably, head 30 is disposed at an obtuse angle from handle 20, so that when handle 20 is held in a horizontal position, head 30 extends toward the ground at approximately a forty-five degree angle relative to handle 20. It is recognized in alternate embodiments that head 30 could be connected to handle 20 by other suitable means, or head 30 could be positioned at any angle relative to handle 20. Further, although handle 20 and head 30 are preferably formed from plastic, it is contemplated in an alternate

embodiment that handle 20 and head 30 could be formed from other suitable lightweight, relatively rigid materials, such as, for exemplary purposes only, wood, aluminum, rubber, or other synthetic materials.

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Head 30 is preferably substantially triangular shaped and comprises first wall 32, second wall 34, third wall 36 and fourth wall 38. It is recognized that head 30 could define other alternatively suitable shapes and/or sizes, such as, for exemplary purposes only, rectangular, trapezoidal or semi-circle. Preferably, first wall 32, second wall 34, third wall 36 and fourth wall 38 possess first edge 33, second edge 35, third edge 37 and fourth edge 39, respectively, wherein first edge 33, second edge 35, third edge 37 and fourth edge 39 together form intake port 40 of head 30. Preferably, lip 50 is integrally formed to first edge 33, wherein lip 50 extends outwards and away from intake port 40 at a substantially perpendicular orientation relative to first wall 32. Lip 50 preferably possesses first side 52 and second side 54 (not shown), wherein second side 54 preferably provides an attachment area for semi-absorbent pad 60, as more fully described below. It is recognized that lip 50 could

alternatively be connected to first edge 33 by other suitable means, such as, for exemplary purposes only, glue, rivets, bolts, screws, or the like. Further, although lip 50 is preferably formed from plastic, it is contemplated in  
5 an alternate embodiment that lip 50 could be formed from other lightweight, relatively rigid materials, such as, for exemplary purposes only, wood, aluminum, rubber, or other synthetic materials.

10 Preferably, semi-absorbent pad 60 is attached to second side 54 of lip 50 by bracket 62, wherein semi-absorbent pad 60 extends outwards, substantially parallel to first wall 32. Preferably, semi-absorbent pad 60 and bracket 62 have a length approximately equal to the length  
15 of lip 50, wherein semi-absorbent pad 60 is glued to bracket 62, and wherein bracket 62 is then glued to second side 54 (not shown) of lip 50, thereby permanently securing semi-absorbent pad 60 to vacuum cleaner attachment 10. Although it is preferred to utilize glue as a securing  
20 means, it is contemplated in an alternate embodiment that other suitable means of securing could be employed, such as, for exemplary purposes only, rivets, bolts, or the like. Further, it is also recognized in an alternate

embodiment that semi-absorbent pad 60 could be removably secured to vacuum cleaner attachment 10 by any suitable means known within the art, such as, for exemplary purposes only, screws, frictional fit or a tongue and groove system.

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Bracket 62 is preferably an aluminum, U-shaped bracket; however, it is recognized that bracket 62 could alternatively be formed from other suitable, strong, rigid materials and could alternatively embody other suitable shapes and/or sizes so long as bracket 62 is capable of securely attaching semi-absorbent pad 60 to lip 50. It is further recognized, in an alternate embodiment, that semi-absorbent pad 60 could be directly mounted to lip 50.

15 Semi-absorbent pad 60 is preferably formed from ethylene propylene diene monomer (EPDM) foam. It is recognized in alternate embodiments that semi-absorbent pad 60 could be formed from other suitable, soft materials known within the art, such as, for exemplary purposes only cloth, rubber, plastic or the like. Preferably, the flexible properties of semi-absorbent pad 60 allow vacuum cleaner attachment 10 to conform to varying surfaces. Additionally, the semi-absorbent properties of semi-

absorbent pad 60 preferably allow it to remove excess water and cleaning solution from a surface, as more fully described below.

5         Squeegee 70 is preferably permanently fixed to second wall 34, proximate to second edge 35, wherein squeegee 70 preferably extends outwards, substantially parallel to second wall 34. Squeegee 70 is preferably glued to second wall 34; however, it is contemplated in an alternate  
10         embodiment that other suitable attachment means could be employed, such as, for exemplary purpose only, cement, tongue and groove, screws, rivets, bolts, or the like. It is further recognized, in an alternate embodiment, that squeegee 70 could be removably secured to vacuum cleaner  
15         attachment 10 by any suitable means known within the art, such as, for exemplary purposes only, screws, frictional fit, or a tongue and groove system. Preferably, squeegee 70 is a thin, flexible strip of rubber having a length approximately equal to the length of second edge 35;  
20         however, it is contemplated in an alternate embodiment that squeegee 70 could be formed from other suitable, soft, flexible materials and could embody other suitable shapes and/or sizes, so long as squeegee 70 is capable of removing

excess water and cleaning solution from a cleaning surface,  
as more fully described below. Squeegee 70 preferably  
comprises ridges 72, wherein ridges 72 permit maximum  
airflow into vacuum cleaner attachment 10, thereby  
5 maximizing cleaning performance.

Preferably, sidewalls 80 are glued to third edge 37  
and fourth edge 39 for providing structural support and  
maintaining the vacuum force. Sidewalls 80 are preferably  
10 thin, flexible, trapezoidal-shaped pieces of rubber;  
however, it is recognized in an alternate embodiment that  
sidewalls 80 could be formed from other suitable soft,  
flexible materials, such as, for exemplary purposes only,  
plastic, EPDM foam, or other synthetic materials. It is  
15 further recognized that sidewalls 80 could alternatively  
embody other suitable shapes and/or sizes, so long as  
sidewalls 80 do not extend beyond semi-absorbent pad 60 or  
squeegee 70, thereby allowing semi-absorbent pad 60 and  
squeegee 70 to contact the surface to be cleaned and  
20 permitting maximum airflow into vacuum cleaner attachment  
10. Although it is preferred that glue be used as a  
securing means, it is contemplated in an alternate  
embodiment, that other suitable means of securing could be

employed, such as, for exemplary purposes only, screws, rivets, bolts or the like. Further, it is also recognized in an alternate embodiment that sidewalls 80 could be removably secured to vacuum cleaner attachment 10 by any  
5 suitable means known within the art, such as, for exemplary purposes only, screws, frictional fit, or a tongue and groove system.

Although it is preferred that sidewalls 80 have a  
10 length approximately equal to third edge 37 and fourth edge 39, it is contemplated in an alternate embodiment that sidewalls 80 could be shorter than third edge 37 and fourth edge 39. In such an embodiment, sidewalls 80 could be substantially centered on third edge 37 and fourth edge 39,  
15 wherein channels 82 and 84 (not shown) are formed between sidewalls 80 and semi-absorbent pad 60 and squeegee 70, respectively, thereby permitting maximum airflow into vacuum cleaner attachment 10. It is recognized in another alternate embodiment that sidewalls 80 could be positioned  
20 on third edge 37 and fourth edge 39 so that only one channel is formed thereon.

The unique combination and configuration of flexible cleaning elements allow vacuum cleaner attachment 10 to conform to uneven and varying surfaces. For example, while not limiting, the present invention has particular  
5 relevance in the motor vehicle and automobile detailing industry, wherein cleaning typically involves applying a cleaning head to uneven and varying exterior motor vehicle surfaces. Furthermore, the present invention can be advantageously utilized with United States Patents Nos.  
10 6,446,881 and 6,595,438 B2, to one of the inventors hereof, wherein a portable powered spray applicator car wash device is provided to hold and dispense liquid cleansers and waxes for rubbing into the body and windows of a vehicle.

15 To operate vacuum cleaner attachment 10, handle 20 is preferably attached to a wet-dry vacuum cleaner and a cleaning solution is preferably applied to a surface to be cleaned. The preferred cleaning solution is a natural, multi-purpose cleaning solution and degreaser comprising d-  
20 limonene, corn surfactants, and soy oil derivatives. Advantageously, it has been found that such a cleaning solution and degreaser provides excellent cleaning properties with a minimum of abrasion-type scrubbing.

Accordingly, use of this preferred cleaning solution in association with the present invention provides superior cleaning characteristics, while sparing surface finishes.

5            Preferably, holding vacuum cleaner attachment 10 by handle 20, vacuum cleaner attachment 10 is moved across the surface to be cleaned, wherein dirt, dust, debris and the like, along with any residual cleaning solution, is removed by squeegee 70. Preferably, any liquid or debris not  
10   cleared away by squeegee 70 is subsequently drawn into intake port 40 by the vacuum source. Further, any remaining liquid or debris is preferably removed by semi-absorbent pad 60.

15            Now referring to an alternate embodiment shown in FIG. 3, semi-absorbent pad 90 possesses rectangular-shaped groove 92 for retaining rectangular-shaped blade 94, wherein rectangular-shaped blade 94 is permanently fixed to semi-absorbent pad 90 by glue. During operation, semi-  
20   absorbent pad 90 flexes away from intake port 96, wherein rectangular-shaped blade 94 contacts the cleaning surface to assist with the removal of excess water and cleaning solution.

Now referring to **FIG. 4**, in an alternate embodiment, semi-absorbent pad 100 possesses T-shaped groove 102 for removably securing blade 104. Blade 104 generally  
5 comprises I-shaped portion 106 and triangular-shaped portion 108, wherein I-shaped portion 106 anchors blade 104 to semi-absorbent pad 100. During operation, semi-absorbent pad 100 flexes away from intake port 101, wherein triangular-shaped portion 108 contacts the cleaning surface  
10 to assist with the removal of excess water and cleaning solution from a cleaning surface.

In another alternate embodiment, vacuum cleaner attachment 10 could comprise broad head 200, wherein broad  
15 head 200 possesses elongated intake port 210 for cleaning large surface areas (as shown in FIGS. 5 and 6).

In another alternate embodiment, vacuum cleaner attachment 10 could be comprised of head 30 only.

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In another alternate embodiment, vacuum cleaner attachment 10 could have an exposed third edge 35 and/or an exposed fourth edge 37.

In yet another alternate embodiment, sidewalls 80 and/or semi-absorbent pad 60 could possess ridges.

5 In still another alternate embodiment, vacuum cleaner attachment 10 could have any number and combination of components selected from lip 50, semi-absorbent pad 60 and squeegee 70.

10 Having thus described exemplary embodiments of the present invention, it should be noted by those skilled in the art that the within disclosures are exemplary only, and that various other alternatives, adaptations, and modifications may be made within the scope of the present  
15 invention. Accordingly, the present invention is not limited to the specific embodiments illustrated herein, but is limited only by the following claims.